purpurea: rostro et pedibus nigris: uropygii plumis laxis admodum elongatis. Long. tot. m. 0·175; alæ m. 0·095; caudæ m. 0·065.

Inhabits moist woods in Peru, where it keeps at the tops of the trees. It generally lives in pairs; its flight is very light.

VIII. Studies on the *Anodontæ* of the Aube, by H. Drouet. Second article (V. pp. 244–251, and VI. pp. 285–290).

In this article the author describes those *Anodontæ* of the Department of the Aube which belong to the second and third groups of the genus,—the *Anatinæ* and *Piscinales*, that is to say, the species allied to *A. anatina* and *piscinalis*. Of the first of these groups there are three species—namely,

5. *A. anatina* (*Mytilus anatinus*, Linn.).
6. *A. Rayii*, Dup.
7. *A. parvula*, Drouet. (*A. coarctata*, Potiez and Michaud; the name changed because previously employed for an American species.)

The second group also includes three species—namely,

8. *A. piscinalis*, Nilss.
9. *A. Milletii*, Ray and Drouet.
10. *A. rostrata* (Kok.), Rossm.

We defer giving the characters of these species until the completion of the memoir.

These numbers also contain reports of the meetings of the Academy of Sciences from the 29th of March to the 21st of June 1852, and also some notices of new works.

PROCEEDINGS OF LEARNED SOCIETIES.

ROYAL INSTITUTION OF GREAT BRITAIN.

April 15, 1853.

On the Identity of Structure of Plants and Animals.
By Thomas H. Huxley, F.R.S.

The lecturer commenced by referring to his endeavour last year* to show that the distinction between living creatures, and those which do not live, consists in the fact, that while the latter tend to remain as they are, unless the operation of some internal cause effect a change in their condition, the former have no such inertia, but pass spontaneously through a definite succession of states,—different in kind and order of succession for different species, but always identical in the members of the same species.

There is, however, another character of living bodies—*Organization*, which is usually supposed to be their most striking peculiarity as contrasted with beings which do not live; and it was to the essential nature of Organization that the lecturer on the present occasion desired to direct attention.

* "On Animal Individuality," Annals, vol. ix. p. 505.

It is not mere external form which constitutes Organization. On the table there was a lead-tree (as it is called), which, a mere product of crystallization, possessed the complicated and graceful form of a delicate Fern. If a section, however, were made of one of the leaflets of this "tree," it would be found to possess a structure optically and chemically homogeneous throughout.

Make a section of any young portion of a real plant, and the result would be very different. It would be found to be neither chemically nor optically homogeneous, but to be composed of small definite masses containing abundance of nitrogen imbedded in a homogeneous matrix having a very different chemical composition. The lecturer explained that it would save a great deal of confusion if two new terms were adopted—that of *Endoplast* for the imbedded masses (*Primordial utricle, nucleus, contents* of authors); that of *Periplastic substance* for the matrix (*cell-wall, intercellular substance* of authors). In all young animal tissues the structure is essentially the same, consisting of a homogeneous periplastic substance with imbedded endoplasts (*nuclei* of authors), as the lecturer illustrated by reference to diagrams, and he therefore drew the conclusion that the common structural character of living bodies as opposed to not living, is the existence in the former of a local physico-chemical differentiation; while the latter are physically and chemically homogeneous throughout.

These facts, in their general outlines, have been well known since the promulgation in 1838 of the celebrated cell-theory of Schwann. Admitting to the fullest extent the meritorious service which this theory had done to physiology, the lecturer endeavoured to show that it was infected by a fundamental error, which had introduced confusion into all later attempts to compare the vegetable with the animal tissues. This error arose from the circumstance that when Schwann wrote, the primordial utricle in the Plant-cell was unknown. Schwann therefore, who started from the structure of Cartilage, supposed that the corpuscle of the cartilage cavity was homologous with the "nucleus" of the vegetable cell, and that therefore all bodies in animal tissues homologous with the cartilage corpuscles were "nuclei." This conclusion is a necessary result of the premisses; and therefore, the lecturer stated that he had carefully re-examined the structure of Cartilage, in order to determine which of its elements corresponded with the primordial utricle of the Plant,—the important missing structure of which Schwann had given no account.

The general result at which he had arrived was this:—*In all the animal tissues the so-called nucleus* (Endoplast) *is the homologue of the primordial utricle* (Endoplast) *of the Plant, the other histological elements being invariably modifications of the periplastic substance.*

Upon this view it becomes easy to trace the absolute identity of plan in the organization of Plants and Animals, the differences between the two being produced merely by the nature and form of the deposits in or modifications of, the periplastic substance.

Thus in the Plant, the endoplast of the young tissue becomes a primordial utricle, in which a "nucleus" may or may not arise; it

persists for a longer or shorter time, and may divide and subdivide, but never becomes metamorphosed into any kind of tissue.

The periplastic substance, on the other hand, undergoes metamorphoses quite independently of the endoplast (a point which has been greatly overlooked, and which the lecturer illustrated by the mode in which the peculiar cells of the Sphagnum leaf acquire their thickening fibre *after the total disappearance of the primordial utricle*); these changes are,—1. chemical; 2. morphological. The chemical changes may be either the conversion of the cellulose into xylogen, &c., or the deposit of salts, silica, &c. Again, the periplastic substance around each endoplast may remain of one chemical composition, or it may be different in the outer part (intercellular substance, woody matter) from what it is in the inner (cellulose wall).

Then, as to the morphological changes in the periplastic substance, they may consist in the development of cavities—*vacuolation* (development of intercellular passages), or in *fibrillation* (spiral fibres, &c.).

It is precisely the same in the Animal.

The endoplast may here develope a nucleus (*e.g.* cartilage corpuscle in some cases), or, as is more usual, it does not; it persists for a longer or shorter time; it divides and subdivides, but it never becomes metamorphosed into any tissue.

The periplastic substance, on the other hand, undergoes quite independent modifications. By chemical change or deposit it acquires horn, collagen, chondrin, syntonin, fats, calcareous salts, according as it becomes epithelium, connective tissue, cartilage, muscle, nerve or bone; and in some cases the chemical change in the immediate neighbourhood of the endoplast is different from that exteriorly, whence the assumption of distinct walls to the cartilage and bone corpuscles; of "cell-contents" and of "intercellular substance," as distinct histological elements.

The morphological changes in the periplastic substance in the Animal again, are of the same nature as in the Plant,—Vacuolation and Fibrillation (by which latter term is understood not only the actual breaking up in definite lines, but the tendency to do so). Vacuolation of the periplastic substance is seen to its greatest extent in the "Areolar" Connective Tissue;—Fibrillation, in Tendons, Fibro-cartilage and Muscle.

In both Plants and Animals then, there is one histological element, the Endoplast, which does nothing but vegetatively repeat itself: the other element, the Periplastic substance, is the subject of all the chemical and morphological metamorphoses in consequence of which specific tissues arise. The differences between them are mainly,—1. That in the Plant the endoplast grows and, as the primordial utricle, attains a large comparative size; while in the Animal the endoplast remains small, the principal bulk being formed by the periplastic substance; and 2. in the nature of the chemical changes in the periplastic substance in each case. This does not, however, always hold good, the Ascidians furnishing examples of animals whose periplastic substance contains cellulose.

In conclusion, the lecturer endeavoured to point out that the value

of the cell-theory was purely anatomical; and that the attempts which had been made to base upon it some physiological explanation of the facts of life,—by the assumption of cell-force, metabolic force, &c. &c.,—were no more philosophical than the old notions of actions of the vessels, &c., of which physiologists have lately taken so much pains to get rid.

ZOOLOGICAL SOCIETY.

March 25, 1851.—William Yarrell, Esq., Vice-President, in the Chair.

Descriptions of new species of Nassa, in the Collection of Hugh Cuming, Esq. By Arthur Adams, F.L.S. etc.

[Continued from p. 325.]

Subgenus Alectrion, Montfort.

Shell bucciniform; spire elevated; inner lip with the callus moderately developed; outer lip dentate, or serrate at the margin.

A. Shell papillose; inner lip spread.

1. Nassa seminodosa, A. Adams. *N. testâ ovato-conicâ, acuminatâ, lævi, nitidâ, fulvo-fuscescente; suturâ tuberculis moniliformibus ornatâ; longitudinaliter plicatâ, plicis supernè subnodulosis; anfractu ultimo anticè transversim sulcato, labio lævi, cum callo tenui expanso obtecto, labro anticè dentato intus lirato.*

Hab. Island of Annaa, South Seas, on the reefs (*H. C.*). Mus. Cuming.

B. Shell smooth, polished.

1. Nassa mucronata, A. Adams. *N. testâ ovato-conicâ, sublævi, nitidâ, longitudinaliter plicatâ, lutescenti fusco variegatâ; anfractibus rotundatis, ultimo gibboso; spirâ acutâ, mucronatâ; labio lævi; labro intus lirato.*

Hab. Dumaguete, isle of Negros, 11 fathoms, black sand (*H. C.*). Mus. Cuming.

2. Nassa obliquata, A. Adams. *N. testâ ovato-conicâ, obliquâ, lævissimâ, nitidâ; lineis fuscis transversis, fasciâ pallidâ ornatâ, cinerescente, albo variegatâ; labio lævi, simplici; labro intus lirato.*

Hab. Cagayan, province of Misamis, island of Mindanao, sandy mud, 25 fathoms (*H. C.*). Mus. Cuming.

3. Nassa punctata, A. Adams. *N. testâ ovato-conicâ; spirâ acuminatâ, lævi, cinereâ, albido punctatâ, lineolis fuscis transversis ornatâ; labio callo tenui expanso tecto; columellâ rugosâ; labro extus incrassato, intus lirato.*

Hab. Puerto Galero, province of Albay, isle of Luzon, coarse sand, 6 fathoms (*H. C.*). Mus. Cuming.

4. Nassa lentiginosa, A. Adams. *N. testâ ovato-conicâ;*